

a subjective and gross chemical basis. These altered vapor/particulate distribution smoke streams will be produced by using paper or charcoal filters. Cigarettes have been designed, filters located, and the filler submitted for cigarette production [4].

III. MAINSTREAM SMOKE STUDIES

The effect of puff profile on 2R1 TPM delivery was measured this month at four different puff volumes with the Programmable Profile Smoking Machine (PPSM) [5]. After calibration of the TRIM settings, puff counts and deliveries for the seven different puff profiles were determined. Puff counts were somewhat higher at the lowest puff volume used (17.5 cc), but varied little for the other three (35, 70, 105 cc). No significant differences in deliveries were noted for any of the puff profiles for 17.5 cc and 35 cc puffs, while some variation was noted for the higher volume puffs.

Condensate from twenty-three different cigarette codes was collected in 83 smoking experiments and solutions were prepared for S/M analysis.

IV. REFERENCES

1. Morgan, W. R. Notebook 8218, p. 116.
2. Lambert, E. A. Notebook 8240, p. 35.
3. Haut, S. A. Notebook 8167, p. 181.
4. Levins, R. J. Notebook 8248, p. 1.
5. Hellams, R. D. Notebook 8250, p. 48.

Robin D. Kenser

2001116515

CHARGE NUMBER: 6908
PROGRAM TITLE: SMOKE CONDENSATE STUDIES
PERIOD COVERED: OCTOBER 1 - 31, 1985
PROJECT LEADER: R. D. KINSER
DATE OF REPORT: NOVEMBER 5, 1985

I. NITROSAMINES

Investigations of possible artifactual formation of tobacco-specific nitrosamines (TSNA) during collection of mainstream (MS) smoke were continued [1,2]. Variables which have been examined include volume of smoke passing through the traps (determined by number of cigarettes smoked), composition of purge gas (air vs. nitrogen), duration of smoking experiment, and amount of ascorbic acid (present as an inhibitor of artifactual TSNA formation) added to the traps. Results from these studies indicate that the 20 mM concentration of ascorbic acid typically utilized is not effective for smokings of 15 or more DBC burley (X6D4BVY) cigarettes. Apparent artifactual formation of NNN is noted when only five BVY cigarettes are smoked if the collection time is increased. Preliminary results suggest that large quantities of ascorbic acid (a 7.5-fold increase over usual levels) may even promote TSNA formation. Experiments are planned to determine if these effects are observed for an all bright cigarette and to develop an artifact-free trapping environment.

A nitrosatable amine, 2,6-dimethylpiperidine, was added to the smoke collection apparatus to monitor the reactions which appeared to be occurring in the bubbler traps [3]. However, no nitrosodimethylpiperidine was found by analysis of trap contents. It is possible that some other amine would be a better probe of artifactual formation; 2-ethylpiperidine has been suggested as a candidate.

A dose response curve was generated for the TSNA delivery inhibiting capability of propyl 3,4-dihydroxyhydrocinnamate (PrDHHC) [3]. Increased levels of PrDHHC resulted in lower TSNA levels in MS smoke. The maximum dosage feasible was ca. 7% w/w, and resulted in TSNA reductions of 30-40%. A similar study of tocopheryl acetate is planned. A study of the effect of alcohol chain length on the TSNA inhibiting properties of the cinnamate esters was also performed. No significant change in MS TSNA level was obtained for methyl DHHC vs. PrDHHC or PrDHHC vs. octyl DHHC. A slight difference was observed between MeDHHC and OcDHHC, but no further work along these lines is planned at this time. Application of the residue from a distillation of Spanish rosemary oil to burley tobacco resulted in decreases in TSNA levels of MS smoke; chemical characterization of the residue will be performed.

II. CONDENSATE CHARACTERIZATION

Studies to characterize the components responsible for the undesirable subjectives of washed, shredded bright stem have begun. Initial experiments will compare particulate depleted MS smoke with gas phase depleted MS smoke on

200116514